

**ABSTRACT**

5       The present invention provides a method of preparation for diamond, graphite or mixtures of diamond and graphite by reduction of CO or CO<sub>2</sub>. Said method comprises a step of contacting an active metal capable of reducing a carbon source into elementary carbon with carbon source (such as CO and/or CO<sub>2</sub> and/or their origin) under conditions suitable to reduce the carbon source to elementary carbon in the course of a reduction  
10 reaction. After the raw diamond or mixtures of diamond and graphite thus obtained are subjected to intensive heat treatment with perchloric acid, pure diamond granules are obtained. The present method employs relatively low reaction temperature and pressure and the facilities needed in the method are simple and easy to operate. Diamond finally obtained has good crystallinity and free of impurities with granule size of several hundred  
15 micrometer. In addition, the present invention makes use of the industrial by-product of CO and CO<sub>2</sub> which not only turns wastes into valuables and is low in cost, but also improves the environment and thus possesses both good social benefits and economical benefits.